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The JOURNAL *of* GEOGRAPHY

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THE RELATION OF GEOGRAPHY TO THE WRITING AND INTERPRETATION OF HISTORY*

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BRIEF SKETCH OF THE THEORIES REGARDING THE INFLUENCE OF GEOGRAPHY UPON THE HISTORICAL DEVELOPMENT OF PEOPLES

Many historians have been startled by what they regarded as the unique and original doctrines of Ellsworth Huntington calling attention to the relation between geography and certain aspects of history, but, as a matter of fact, this approach to the interpretation of the progress of society is as old as history itself.[1] The subject was first systematically discussed by the contemporary of Herodotus and Thucydides, the phsyician Hippocrates of Cos (c. 460-370 B.C.), in his work on "Airs, Waters, and Places." While primarily concerned with the relation between environment and the patho-genesis of disease, Hippocrates digressed into a discussion of the relation of geographical surrounding to the character of peoples, and presented an interesting account of the effect of climate and topography upon the physical characteristics and the political tendencies of the peoples of Asia and southeastern Europe.[2] Aristotle found a geographical explanation for the assumed superiority of the Greeks over the barbarians. He contended that by virtue of their intermediate geographical position the Greeks were able to combine the superior mental attainments of southern peoples and the greater bravery of northerners, while escaping the fickleness of the southerners and the stupidity of the inhabitants of cold climates.[3] Strabo (64 B.C.–19 A.D.) was

* Revision of a paper prepared for the spring meeting of the New England Teachers' Association, Clark University, March 19, 1921.

[1] A brief and ill-proportioned survey of the history of this subject is contained in A. H. Koller's, The Theory of Environment. The authoritative survey is in preparation by J. Franklin Thomas. Much of value on the earlier period is to be found in A. Meuten's Bodin's Theorie von der Beinflussung des politischen Lebens durch ihre geographische Lage.

[2] Works of Hippocrates, trans. by Adams, London, 1841, Vol. I, pp. 190-222.

[3] Politics, Jowett's translation, II, 7.

not only the greatest geographer of antiquity; he also contributed much of value on the theory of the relation between topography, climate and civilization, as well as presenting much descriptive material on the environments of the leading contemporary peoples.[4]

The Roman writers made use of environmental doctrine to explain the alleged superiority of the Roman polity and culture. Cicero (106–43 B.C.) pointed to the excellent strategic position and the topographic advantages of the city of Rome, while Vitruvius (c. 30 B.C.) commented upon the favorable climate and astral influences of Italy.[5] Vegetius (c. 375 A.D.) attempted to explain the military prowess of various nations on the basis of the influences radiating from their differing geographical environments.[6] Paul the Deacon (725-800) in his "History of the Lombards" discussed the relation of geographical environment to the characteristics of the Germanic barbarians.[7]

In the medieval period St. Thomas Aquinas (1227-1274) revived the doctrines of Aristotle on the question of environmental influences and gave them vogue among scholastic philosophers.[8] The Arab historian, Ibn Khaldun (1332-1406), combined the Arabian appropriation of Aristotle with the progress of geographical science among the Arabs in what was the most thoro analysis of geographical influences upon human society which had appeared down to his time.[9] The French political philosopher and historian, Jean Bodin (1530-1596), contended that their geographic situation had made the French the foremost nation of the world, and analyzed in some detail the effect of topography and climate upon the inhabitants of a geographical region.[10] The chief defect in these early doctrines was that they were based upon fallacious scientific postulates, namely the Greek physical philosophy and physiological chemistry and the belief in astrology. When they attempted an ultimate explanation of geographical influences these writers resorted to the doctrine of the four elements in

[4] H. F. Tozer: History of Ancient Geography; Selections from Strabo; and the English translation of Strabo's Geography in the Bohn library.

[5] Cicero: De republica, 1, 3; Vitruvius: The Ten Books on Architecture, trans. by Morgan, Book VI, Chap. I.

[6] Vegetius: De re militari, 1, 2.

[7] Paul the Deacon: History of the Langobards, trans. by W. D. Foulke.

[8] Aquinas: De regimine principum, II, i-iv.

[9] Ibn Khaldun: Prolégomènes historiques, trans. by M. G. De Slane. Cf. R. Flint: History of the Philosophy of History in France, 1894, pp. 158 ff.

[10] Jean Bodin: The Six Bookes of a Commonweale, trans. by Richard Knolles, Book V, Chap. I, Cf. Meuten, op. cit. Fournol, Bodin, prédécesseur de Montesquieu; Flint: op. cit. pp. 190–200.

man's bodily constitution, the four humors which determined his health, and the influence of astral bodies on the constitution and the destiny of man. Between the time of Bodin and that of Montesquieu (1689-1755), Boyle, Stahl and other seventeenth century scientists had destroyed the grotesque body of Greek physical philosophy and established the inductive or experimental method in science. Tycho Brahe, Galileo and Kepler had discredited astrology. Hence, tho Montesquieu may have in part formulated his doctrines of geographic determinism from experimentation as to the effect of heat and cold upon a sheep's tongue, such procedure marked a great advance over Empedocles and astrological hypotheses. Richard Mead, an English physician of note, under the influence of Isaac Newton's scientific discoveries, composed the first modern treatise on the effect of the atmosphere upon human conduct and vitality, "The Power of the Sun and Moon over Human Bodies" (1704). An even more comprehensive and suggestive work was John Arbuthnot's "Essay on the Effects of Air on Human Bodies" (1733), which is said by Dedieu to have furnished Montesquieu with most of his views with respect to the effect of climate on man. The brilliant young Dutch physician, Bernhardus Varenius (1622-50), in his "Geographia generalis" not only created the framework for the modern science of geography, but also foreshadowed the work of Ritter in comparative geography. The "Travels" of Sir John Chardin (1667-1735) did much to popularize the knowledge of extra-European lands, particularly the near orient, and were widely used later by such writers as Montesquieu. Finally, Vico (1668-1744) in his "Scienza nuova" anticipated Montesquieu in his appropriation of these advances for social science.

The beginning of scientific anthropogeography is conventionally associated with the appearance in 1817-18 of the first edition of Karl Ritter's "Die Erdkunde im Verhältniss zur Natur und zur Geschichte der Menschen."[11] A number of phases of progress in geographical and other sciences served to make possible Ritter's monumental work and to give its views wide currency. Montesquieu discussed the importance of a knowledge of geographical environment, particularly climate, in understanding the customs, laws and civilization of peoples, and the school of historians, led by Heeren, who adhered to his views, naturally emphasized the significance of geographical factors.[12]

[11] The significant portions of Ritter's work are translated by W. L. Gage in a work entitled "Ritter's Geographical Essays."

[12] Montesquieu: The Spirit of Laws, Books XIV, XVII; Heeren: Ideen über die Politik, den Verkehr, und den Handel der vornehmsten Völker der Alten Welt (trans. by Tolboys, 1833).

Montesquieu's work was subjected to constructive criticism by Turgot (1727-1781) and Charles Comte (1782-1837).[13] Romanticism was foreshadowed by Herder who inquired at length into the geographical elements which entered into the shaping of national character.[14] The progress and utilization of geographical discovery, best typified perhaps by the work of Alexander von Humboldt, vastly increased the body of geographical data and helped to shape the subject of physical geography.[15] The Darwinian hypothesis of the evolutionary development of living matter thru the reciprocal action of environment and organism, while not utilized by Ritter, served later to give acceptance and added significance to his doctrines. Wilhelm Riehl and Gustav Freytag, in attempting to reconstruct the social history of Germany, made wide use of geographical material in interpreting the development of the German people.[16] Buckle, in his effort to reduce history to an exact science, held that one must accept the doctrine of the influence of geography on culture, especially in the earlier periods of human development.[17] F. Hellwald in his "Kulturgeschichte in ihrer natürlichen Entwickelung" (1874) worked out a universal history in which he assigned large place to geographical influences. Finally, the impulse to systematic anthropogeography, which had been initiated by Ritter, was carried further by Peschel, Ratzel, Kirchoff, Semple, Vallaux, Reclus, and Brunhes. It is of significance in any study of the relation between geography and history to note that such important writers as Heeren, Ritter, Buckle, Hellwald, Ratzel and Semple were professionally quite as much historians as students of geography.

Some More Notable Contributions of Anthropogeography to History

A brief catalogue of the more significant works on various phases of anthropogeography will suffice to indicate the large amount of relevant material which this group of writers has put at the disposal of historians. Peschel, Ratzel and Kirchoff in Germany; Reclus, Vallaux

[13] Cf. Flint: op. cit., pp. 286-7, 577-9.

[14] Herder: Ideen zur Philosophie der Geschichte der Menschheit, trans. by Churchill, 1800. Cf. Flint: History of the Philosophy of History, (1874 edition), pp. 375-386.

[15] Humboldt: Ansichten der Natur (English trans. 1850); also Cosmos, Vol. I.

[16] W. Riehl: Die Naturgeschichte des Volkes als Grundlage einer deutschen Sozialpolitik, Vol. I, (Land und Leute); G. Freytag: Bilder aus der deutschen Vergangenheit. Cf. Gooch: History and Historians in the Nineteenth Century, pp. 574-80.

[17] H. T. Buckle: History of Civilization in England, Chap. II. Cf. J. M. Robertson: Buckle and His Critics.

and Brunhes in France; and Miss Semple in the United States have contributed systematic works on anthropogeography which deal with nearly every phase of geographic influences on man.[18] Fully as important as the systematic works upon the subject are the writings of those who have considered special aspects of environmental influences. The influence of topography in its general implications has been discussed by Demolins, Cowan and Vallaux. Demolins has pointed out the relation of natural routes of travel and communication to the movements, habitats and culture of peoples.[19] Cowan has combined the environmental doctrine with the theory of group-conflict as the chief progressive force in society. Holding that progress can come only where there is enough social mixture and conflict to prevent cultural stagnation, and yet not so great a degree of invasion as to produce continuous warfare and destruction, he has attempted to prove that the great historic nations have evolved in those districts where the topography secured protection without at the same time causing isolation.[20] Vallaux contends that progress is possible only where there is an adequate degree of social differentiation and division of labor, and he holds that this condition can exist only in a region of variegated topography and climate.[21] The importance of rivers, of the sea and the ocean for the movements of peoples and the expansion of civilization has been touched upon by Metchnikoff and Mackinder, and systematically studied by Vallaux.[22] The historical significance of the great oriental river basins has been studied by Léon Metchnikoff, who has tried to demonstrate that they supplied the sole conditions of fertility of soil and concentration of population under which man could make his first steps towards civilization. He further contends that the chief stages of civilization have been those founded upon a river, then a sea or thalassic, and finally an oceanic environment.[23] Le Play and Geddes have analyzed the river basin as a natural geographic region which has been the unit of cultural evolution and should constitute

[18] F. Ratzel: Anthropologie; and Politische Geographie. The best summary of Ratzel's views is contained in Chap. III of Vol. I of Helmholt's Weltgeschichte, of which an English translation is available. An excellent brief sketch of Ratzel's contributions is contained in Brunhes' Human Geography, pp. 31-35. A. Kirchhoff: Mensch und Erde (English translation, 1914); E. Reclus: Nouvelle géographie universelle; C. Vallaux: Géographie sociale; le sol et l' état; J. Brunhes: La Géographie humaine (English translation, 1920); E. C. Semple: The Influences of Geographic Environment.

[19] E. Demolins: Comment la route crée le type social.

[20] A. R. Cowan: Master Clues in World History.

[21] Vallaux: op. cit., pp. 174 ff., 244 ff.

[22] C. Vallaux: Géographie sociale: la mer.

[23] L. Metchnikoff: La Civilisation et les grandes fleuves historiques.

the basic unit for social reconstruction.[24] The relation of strategic geographical position to political and economic power has been pointed out by Ratzel and Cowan, but has been most strikingly worked out by H. J. Mackinder. In particular he has contended that the pivotal area in the old world is the great Eurasiatic steppe region and he maintains that the state possessing this district has the key to the domination of the eastern hemisphere.[27] Climate, in both its static and dynamic aspects has claimed the attention of Ellsworth Huntington in several daring and original volumes. He has not only attempted to correlate culture and civilization with the presence of certain specific climatic conditions, but, following out the suggestions of Holdich and Kropotkin, has also made an effort to connect great historic changes with what he assumes to be marked climatic oscillations.[26] Less spectacular but more reliable work has been done in this field by R. D. C. Ward.[27] The relation of climatic influences to international relations has been discussed by Ripley and Woodruff, particularly with reference to the possibility of the white race inhabiting the tropics as permanent occupants. Ripley contends that this is still an open question, but Woodruff is confident that climatic and solar influences will operate to prevent permanent large-scale white settlement in the tropics.[28] Ripley has further produced a monumental work on the relation between physical environment and racial characteristics.[29] Leffingwell has sought to correlate seasonal changes with certain aberrations of conduct.[30] Dexter has contributed the most thoro study of the effect of temporary oscillations of the weather upon human conduct, energy and vitality.[31] An even more comprehensive study has been undertaken by W. Hellpach in his "Die Geopsychischen Erscheinungen." Finally, Brunhes has insisted that any comprehensive account of environmental influences must include a consideration of the artificial environment which man has contributed. For a majority of the population of the modern western world the

[24] F. Le Play: La Réforme sociale; P. Geddes: Cities in Evolution; Geddes and Branford: The Coming Polity.

[25] H. J. Mackinder: The Geographical Pivot of History in *Geographical Journal*, April, 1904; Democratic Ideals and Reality; Cf. Teggart: Processes of History, Chap. II.

[26] E. Huntington: The Pulse of Asia; Civilization and Climate; World Power and Evolution.

[27] R. D. C. Ward: Climate. The standard reference work on climate is J. Hann's Handbuch der Klimatologie.

[28] W. Z. Ripley: The Races of Europe; Chap. XXI; C. E. Woodruff: The Effect of Tropical Light on White Man; and Medical Ethnology.

[29] Ripley: op. cit.

[30] A. Leffingwell: The Influence of Seasons upon Conduct.

[31] E. G. Dexter: Conduct and the Weather; and Weather Influences.

artificial environment of the industrial city is of more significance than the geographical features of adjacent regions, even tho the very existence of the city in a particular region depended upon the original facts of geographic location and opportunities. Special attention must be given to man's exploitation and alteration of the natural geographical environment.[32]

SOME OF THE MORE IMPORTANT EXAMPLES OF AN APPROPRIATION OF GEOGRAPHICAL DATA FOR HISTORY

Historians have long insisted that a knowledge of geography is essential to any intelligent grasp of the history of a state.[33] It is significant that the first works on method and interpretation in historical study—Polybius' "History of Rome," the "Prolégomènes historiques" of Ibn Khaldun, the "Methodus ad facilem historiarum cognitionem" of Jean Bodin, and the "Méthode pour étudier l'histoire" of Nicolas Lenglet-Dufresnoy (1674-1755)—all stressed the assertion that an acquaintance with the geographical background constituted the indispensable prolegomena to historical writing. While some of the early modern historians gave evidence of adherence to this doctrine, most of the notable writing on historical geography or geographical history has been subsequent to the work of Karl Ritter and Guyot.

There are a number of useful works on the relation of geography to universal history or to the general history of Europe. Perhaps the best known classic is E. A. Freeman's "Historical Geography of Europe," but on account of the predilection for purely political geography and the archaic views of the author on the nature of history the book has come to be out of date in at least a theoretical sense. H. B. George's "Relation of Geography and History" is also rendered less useful on account of its devotion chiefly to political and military history and the lack of evidence of a grasp upon modern anthropogeographical literature and doctrines. A much more progressive and up-to-date introduction to the subject is James Fairgrieve's "Geography and World Power." This illuminating review of world history in its geographic setting endeavors to "show how the way in which man has been able to use more and more energy has been determined by his distribution on the earth's surface." Another brief work, more

[32] J. Brunhes: La Géographie humaine. An English translation of this extremely important work has just appeared. It is entitled Human Geography and is published by Rand, McNally & Co.

[33] For a brief survey of this subject see Brunhes' Human Geography, Chap. IX.

analytical than chronological, is Ernest Protheroe's "The Dominion of Man." A coöperative universal history, which constituted a great improvement over Hellwald, has been worked out according to the views of Friedrich Ratzel, the greatest of modern students of anthropogeography—H. F. Helmolt's "Weltgeschichte." The English edition has a valuable introductory chapter by James Bryce discussing the problems of historical methodology and interpretation with special attention to the bearing of geography on this problem, and H. G. Wells has made wide use of this work in his brilliant attempt at a synthesis of world history—"The Outline of History." More elaborate ethnographic surveys are provided by such works as Ratzel's "History of Mankind," and Reclus' "The Earth and Its Inhabitants." The extensive monographs of German geographers carry the subject into far greater detail. Mackinder's "Regions of the World" is not only a valuable series for geographical data but is also an example of progress towards regional geography. A stimulating discussion of the relation of recent anthropogeographical doctrine to dynamic history is contained in the second chapter of F. J. Teggart's "Processes of History."[34]

It has long been a cardinal doctrine of anthropogeography that the influence of environment upon man is most powerful in the period of primitive life, and excellent studies have been made of the relation of primitive man to his physical environment, tho the more critical modern anthropologists have shown that there is no complete determination of human culture by geography even in primitive times.[35] The relation of geographic factors to the early history of the near orient has been adequately recognized in the brilliant works of George Adam Smith, Ellsworth Huntington, J. L. Myres, and J. H. Breasted. The river basin environments of these early empires have received far more detailed attention in L. Metchnikoff's "Les grands fleuves historiques." Most standard histories, such as those by Meyer, Breasted, Rogers and Jastrow, give decent attention to the geographical setting of the orient. Passing to the classical period with its geographical area of development in the Mediterranean basin, the environmental background of the historical development has been even more thoroly studied. The nature of the whole Mediterranean

[34] A brief survey of the literature of this subject and an outline of the chief topics is contained in D. E. Smith's Syllabus of Historical Geography, University of California Press, 1908. The bibliography is unfortunately somewhat out of date.

[35] C. F. Boas: Mind of Primitive Man, pp. 159-164; R. H. Lowie: Culture and Ethnology, Chaps. III-IV; A. A. Goldenweiser: Early Civilization.

basin has been analyzed and described in an excellent fashion by A. Philippson in his "Das Mittelmeergebiet." The Greek area and the Balkan region have been surveyed in D. G. Hogarth's "The Nearer East," Marion I. Newbigin's "Geographical Aspects of the Balkans," and Philippson's works on the Aegean. Historians of Greece from Curtius to Zimmern have given a respectable amount of consideration to the matter of the Greek physical environment.[36] H. Nissen in his "Italische Landeskunde" has provided the definitive survey of Italian geography and its historical implications. Progressive historians of Rome and Italy, such as Gothein and Ferrero, have made ample use of these data. One of the few examples of an adequate textbook appropriation of these geographical data on classical history is that contained in the excellent chapter on "The Lands of the West" in Hutton Webster's "Ancient History." In his monumental work on the expansion of early Christianity Adolf Harnack has explained the geographical factors involved in this great historic process.

When we come to consider national history it becomes evident that here again much excellent work has been done in treating the geographical elements involved. Due in part to Le Play's emphasis upon regionalism the French have carried out the study of the local geography of France with a thoroness not equalled elsewhere. Michelet a century ago based his widely-known "History of France" upon a thoro knowledge and description of French geography,[37] and the great scholarly coöperative history of France devoted the first four hundred pages to a detailed analysis of French geography by P. Vidal de la Blache.[38] French origins have been related to their geographic setting with thoroness and ingenuity by Camille Jullian.[39] Germany and central Europe have been carefully studied in regard to the geographical basis of their historical development in such works as Karl Kretschmer's "Historische Geographie von Mitteleuropa," J. Partsch's "Central Europe," A. Penck's "Die Donau," Wilhelm Goetz's "Historische Geographie," and the coöperative works edited by Kirchoff and Scobel. Progressive German historians, particularly those concerned with social and economic development, from Riehl to Lamprecht and Breysig have utilized this geographic knowledge. While certain well known Russian histories, such as

[36] E. Curtius: History of Greece, Chap. I; A. E. Zimmern: The Greek Commonwealth, pp. 13-64.

[37] J. Michelet: History of France, Vol. II, Chap. I.

[38] E. Lavisse: Histoire de France, Vol. I.

[39] C. Jullian: Histoire de la Gaule. Haskins in his, The Normans in European History, (Chap. I) has recognized the geographic basis of Norman institutions.

those by Brockhaus, Rambaud, Morfill, Leroy-Beaulieu and Noble contain some data as to geographic facts, the historical geography of Russia is still a partially unfulfilled task, even in Russian historical and geographical literature. The geography of the British Isles has been analyzed by a number of scholars, best perhaps by H. J. Mackinder in his "British Isles and British Seas." Beginning with J. R. Green's "Geography of the British Isles" and "The Making of England," English historians have made use of pertinent geographical knowledge. The expansion of England in its political and geographical aspects has been surveyed in C. P. Lucas' "Historical Geography of the British Colonies."

In no country has the relation between geography and history been more thoroly accepted than in the United States, partly due to the connection between American and German anthropogeography, and partly to the more progressive and original nature of American historiography and the more evident connection between political and geographical history due to the process of westward expansion. Back in the middle of the last century the German geographer J. G. Kohl contributed a voluminous work on the historical geography of the discovery and colonization of America. Ritter's views were early popularized in this country by Guyot and W. L. Gage. The first comprehensive study of American history in its geographical aspects came from no other writer than Friedrich Ratzel himself in his "Politische Geographie der Vereinigten Staaten." The geographical factors in American history have been admirably assembled in N. S. Shaler's "Nature and Man in America" and A. P. Brigham's "Geographic Influences in American History." The connection between these facts and the leading developments in American history has been provided in Miss E. C. Semple's "American History and Its Geographic Conditions." An application of something suggesting Demolin's approach has been supplied in the works of A. B. Hulbert on "Historic Highways of America," and "Routes of Inland Trade." In his remarkable work, "A History of the New World Called America," E. J. Payne has described the geographical setting of the colonizing era. A faint beginning towards connecting regional geography and political history was made by Justin Winsor in his "Mississippi Basin." In his "History of the American Civil War" J. W. Draper has exaggerated the effect of climate upon American sectionalism. The great impetus to relating the interpretation of American historical development to natural geographical regions has, however, resulted from the work of Frederick Jackson Turner and his disciples. There

is no doubt that Turner and his school have done as much to advance the cause of historical and regional geography in this country as the geographers and physiographers themselves.[40]

The expansion of Europe overseas has had an extremely important relation to the growth of historical geography. It was the curiosity over the newly discovered lands and peoples that gave rise to both modern geography and the modern interest of historians in geographical data.[41] Owing in part to the fact that the usual data for conventional historical writing in biographies of statesmen and politicians, anecdotes of court scandals, and military episodes have been scarcely as rich in the history of colonization and the conquest of less developed peoples as in accounts of the home country, the historians of European expansion have been compelled to give more attention to geographic, economic and social factors. In the standard manuals on colonization by Morris, Keller, Zimmermann, Girault and Leroy-Beaulieu one will find some attention given to the geographical setting, while in special treatments of particular areas by such writers as H. H. Johnston and Hans Meyer and his associates the physical environment is analyzed with some detail.[42] The World War stimulated the interest of geographers and historians in the matter of the geographical elements involved in military strategy, a subject which C. Oman had earlier studied in detail in his "History of the Peninsular War." Of this type of product probably the most representative work which appeared in English was D. W. Johnson's "Topography and Strategy in the War." Sir Thomas H. Holdich in his "Political Frontiers and Boundary Making" has described the geographical problems which enter into the reconstruction of European boundaries in the post-war period.

THE DISPARITY BETWEEN THE EXISTING BODY OF KNOWLEDGE ON HISTORICAL GEOGRAPHY AND THE DEGREE OF ITS UTILIZATION IN THE CONVENTIONAL WRITING AND TEACHING OF HISTORY

The fact which probably most impresses the student of historiography is the degree to which the conventional treatment of the subject

[40] The more important generalizations of Turner are included in his volume of essays on The Frontier in American History. His Syllabus of the History of the West contains detailed references to authorities.

[41] Cf. E. Fueter: L'Histoire de la historiographie moderne, pp. 361 ff.

[42] See references in Brunhes' Human Geography, p. 589, Note 1; for detailed references see bibliography in article "World Politics" in Encyclopedia Americana, and bibliography following chapters II, XXVII, XXVIII and XXIX of Hayes' Political and Social History of Europe.

has lagged behind the more progressive tendencies.[43] This has been as true in the matter of the general lack of appropriation of the existing and readily available information with respect to the indispensable geographical background of history as it has been with regard to the other phases of the anachronisms of conventional historiography. Even among the better type of monographs and textbooks it is rare to find one which gives anything like as much space to the geographical factors underlying the historical development as it does to well-nigh irrelevant biographical episodes and anecdotes. An excellent illustration of the conventional attitude of even the most scholarly historians in the country that has been most progressive in historiography may be found in the decidedly hostile attitude of the majority of the historians who discussed Professor Giddings' paper on social causation in New Orleans in 1903.[44] Even where a textbook devotes respectable space to geographical material the average teacher of history regards this as the least significant portion of the manual and either skips it altogether or passes over it hurriedly. Further, even where considerable attention is given to the so-called "map-studies" in history courses, the work is rarely a consideration of geography at all in its modern signification, but rather a detailed investigation of what has been well designated "chromatic politics." Little attention is given to anything except changing political boundaries, which are rarely correlated with geographical factors of any great significance. One might safely hold that truly scientific geography, namely dynamic and regional geography, has made almost no impression upon historiography when one takes into consideration the number of books written on the subject and the number of teachers engaged. No other reason can be assigned for this strange anachronism except that which Professor Robinson has recently pointed out, namely, that we retain many of our primitive traits of mind, with all the opposition to new ideas, and are subject to that domination of herd opinion which operates to make us unusually resistive to progress and unwilling to accept it unless forced upon us by the economic aspects of the exigencies of our professional careers.[45]

[43] I have tried to touch upon various phases of this subject in the article on "History: Its Rise and Development," in the Encyclopedia Americana, and in articles in the American Journal of Psychology, October, 1919; the Scientific Monthly, August, 1920; The Psychoanalytic Review, January, 1921; and The Historical Outlook, February, 1921.

[44] See Publications of the American Economic Association, Third Series, Vol. V, No. 2, 1904, pp. 190 ff.

[45] J. H. Robinson: "Mind in the Making," Harper's Magazine, 1920.

It would seem that one of the chief obstacles to the adequate appreciation of geographical data by professional historians would be removed if we ceased to talk of geographic influences as of a *determining* character and recognized that rather they are extremely important *conditioning factors*. The anthropologists and cultural historians have made out a fairly good case against absolute environmental determinism,[46] and the historians are still generally infected with metaphysical doctrines as to free-will, and not by any means freed of theological dogmas which oppose every kind of materialistic determinism. It is not a matter of earth versus man, but, as Ratzel has well insisted, a problem of man and the earth evolving together as the result of reciprocal influences.[47] Particularly is this true if one accepts Brunhes' view that the human alterations of the natural geographic factors and the artificial environment, for instance, the modern city, are to be considered as well as natural environment.[48] Further, one must keep in mind the fact that with the development of science and technology man is able to win a progressively greater mastery over nature. The effect of a geographical factor thus differs during the historic period. The ocean, which a thousand years ago was an insuperable obstacle, has, with the advent of the compass, sextant, cartography and the steamboat, become one of the foremost aids to progress in the modern world.

THE NEWER SYNTHETIC HISTORY AND REGIONAL GEOGRAPHY[49]

There is no doubt that geography has important relations to every type of history, even the most archaic political and military history. Probably no factor has had a greater influence upon English political and diplomatic history than its insular position and more recently its imperial responsibilities. The diversity of American colonial political institutions has been shown to depend to a large degree upon geographic differences. Professors Turner, Buck and Haynes have indicated the geographical foundations of agrarian politics in the United States since the Civil War. Yet political history is not the most fertile field in which to study geographical factors. The primary

[46] Boas and Lowie: loc. cit.; R. R. Marett, Anthropology, Chap. IV; A. A. Goldenweiser: Culture and Environment, in American Journal of Sociology, March, 1916.

[47] Ratzel: in Helmolt, op. cit., Vol. I, p. 61.

[48] J. Brunhes: Human Geography. Cf. N. S. Shaler: Man and the Earth; and A. J. and F. D. Herbertson: Man and His Work, An Introduction to Human Geography.

[49] On the Nature and development of synthetic history see the article by Carl Becker in Publications of the American Sociological Society. Vol. VII, 1912, pp. 73-107; also the Historical Outlook, Feb., 1921.

occupation with changes in political boundaries is quite as destructive of good geography as of good history. One point should be noted, however, namely that even the most perfect political boundaries of the present time—those coinciding with national lines of demarcation—are less natural and perfect than those which relate to fundamental geographical regions. It may well be that the struggles of the future will be to establish the "rights" of natural physical regions, instead of the rights of nations, a point which has been brought up by Le Play and by Geddes and his school. Without going into a discussion of the importance of "regionalism" in political and social reconstruction,[50] it may safely be maintained that the only sane history must be that which meets the new geography in the study of fundamentally unified geographic regions and minimizes, while not ignoring, the artificial political units.

The two branches of the modern historical investigation which seem most likely to have fruitful interrelationship with regional geography are international relations and intellectual, industrial and social history.[51] The expansion of Europe and the resulting international relations have been most intimately bound up with geography. The colonization and imperialistic occupation of the extra-European areas have followed and been dependent upon the progress of geographical exploration and discovery and the revelation of resources inviting exploitation. On the other hand, without the subsequent occupation of the regions explored by Europeans, the discoveries would have been devoid of value, except for the incidental additions to scientific knowledge.[52] Likewise, the progress of geographical knowledge and discovery has been intimately related to intellectual history. Not only have the progress of the science of geography and the results of geographic discovery been productive of great additions to the history of science and thought, but also it is coming to be recognized that the expansion of Europe overseas and its various results did more than anything else to break down the paralyzing medieval order and bring into existence modern times with its industrialism and critical thought.[53] Again, regional geography is inseparably bound up with

[50] On this point see, C. Brun: Le Régionalisme; P. Geddes: Cities in Evolution; Geddes and Branford: The Coming Polity.

[51] I have indicated that these are the most promising fields now being cultivated by historians in a syllabus on "Recent Tendencies and Problems in the Study and Interpretation of History" in *The Historical Outook*, 1921.

[52] Cf. J. Jacobs: The Story of Geographic Discovery; W. R. Shepherd: The Expansion of Europe, Political Science Quarterly, 1919; R. Muir: The Expansion of Europe.

[53] Cf. Shepherd: loc. cit.; J. E. Gillespie: The Influence of Overseas Expansion on England to 1700; W. C. Abbott: The Expansion of Europe.

economic and social history. Modern industrial civilization is a product of two chief factors, geographic resources and the advanced machine-factory technology which enables us to exploit these resources to an unparalleled degree. It will require no further argument to establish the dependence of industrial history upon regional geography or the necessity of industrial history to give *rationale* to regional geography.[54] It can be demonstrated with equal ease that social history must be associated with geography. Agrarian life is intimately bound up with the natural resources; prosperity and culture being correlated with areas of fertility, and poverty and backwardness with regions of inferior productiveness.[55] Urban life, which is becoming more and more characteristic of modern civilization, not only depends for its existence on the exploitation of geographic resources by modern industrial technique, but also is normally located at points where this exploitation can proceed with the greatest facility and economy. The chief social processes, migration, conflict, and assimilation have ever been intimately associated with geographic factors.[56] It so happens that these fields of historical endeavor with which geography is most intimately bound up, namely, international relations, intellectual, social and economic history, are those in which progress is most evident at the present time and in which new and progressive ideas are most readily accepted. This fact cannot but be regarded as auspicious by those who hope for the growth of a *rapport* between history and geography.

While we have been in this article chiefly concerned with the relation of geography to history it may be well to insist that it is not less pertinent to the other social sciences. Professor Giddings has frankly admitted that sociological doctrine has consisted of a combination of psychological and geographical interpretations of the social process, and he has sought to correlate and synthesize these factors in

[54] This field is surveyed in the standard monographs and manuals of Gibbins, Cunningham, Usher, Levasseur, Schmoller, Kovalevsky, Bogart, Coman, Van Metre, and in the classic works on economic geography by Goetz, Chisholm, McFarlane, and J. Russell Smith.

[55] For an admirable statement of the value of a knowledge of the botany, agriculture, zoology, geology, and hydrography of a region in reconstructing its history see J. H. Breasted, The Place of the Near Orient in the Career of Man in *Journal of the American Oriental Society*, Vol. XXIX, pp. 159-184. Cf. also on this point A. B. Hulbert, The Increasing Debt of History to Science, in *Proceedings of the American Antiquarian Society*, April 1919; and Laura H. Wild, Geographie Influences in Old Testament Masterpieces.

[56] Cf. F. H. Giddings: A Theory of History, *Political Science Quarterly*, December, 1920; A. C. Haddon: The Wanderings of Peoples; F. Oppenheimer: The State; J. L. Myres: The Dawn of History; W. L. Ripley: Geography as a Sociological Study, *Political Science Quarterly*, 1895.

his own interpretation.[57] Economics is most frequently defined as the science of wealth-getting, or, in other words, the science of exploiting the environment.[58] Political scientists from the time of Aristotle have recognized the influence of geographic conditions upon the policies and destinies of states. Wars spring in large part from a desire to secure natural resources, and the degree of natural geographic protection determines the amount of artificial military or naval protection which will be necessary. Again, geographic conditions to a large degree determine the density and nature of the social population which reacts to shape the state and political policies.[59] As laws reflect social conditions and pressure, and are the product of political institutions, jurisprudence is also not without its dependence upon geographic factors, something which has long been recognized by the comparative school of jurisprudence.[60] Finally, the modern students of ethics have given up the doctrine of transcendental ethical values and have accepted the pragmatic and comparative doctrine of relativity. Ethical conduct is determined by the mores of the particular group, and these mores have been built up thru the reaction of the population to the facts of their physical environment.[61]

It should be a matter of more than local interest that under the guidance of President Wallace W. Atwood, Clark University is planning to take the lead in this country in establishing a graduate school of regional geography. Dr. Atwood, himself a pioneer in the new regional geography, has gathered together for work beginning with the summer session of 1921 eminent specialists in geography, geology and meteorology, and has secured at least temporarily the services of Miss Semple, the foremost of our interpreters of the geographical background of history. The departments of history, economics and sociology are being adapted to the most efficient coöperation with the new geography, but it is hoped that the school of geography will find its chief service in coöperation with history and social science at large in this country, and in furnishing graduate students in these subjects with an opportunity to secure adequate training in all fields of historical geography and anthropogeography. If present aims are achieved it will more nearly realize than has any other American

[57] F. H. Giddings: Principles of Sociology, p. 10; A Theory of Social Causation, loc. cit.

[58] E. R. A. Seligman: Economic Interpretation of History, pp. 11-15, 65-6; H. J. Davenport: Economics of Enterprise, Chap. I.

[59] J. W. Garner: Introduction to Political Science, pp. 68-79.

[60] Recognized by juristic writers from Montesquieu to Ihering and Roscoe Pound.

[61] W. G. Sumner: Folkways; Dewey and Tufts: Ethics.

school up to date the ideal recently expressed by Professor J. C. Merriam, namely, to make "the earth sciences the background of history."[62]

THE PORT OF NEW ORLEANS

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Railroad congestion during the past decade has resulted in a determined effort to rehabilitate traffic on the Mississippi River. The Mississippi-Warrior Barge Line, the outcome of such plans, has necessitated comprehensive terminal facilities, especially at St. Louis, Memphis, and New Orleans. River traffic brings water-borne commodities to river ports and creates more favorable rail rates. Such traffic is therefore doubly attractive to a river port. Port facilities are the key to such traffic. River traffic is more effective as a means for commercial expansion if facilities are provided for holding goods in transit until such a time when the market is favorable. That is, facilities whereby a port may be a "market of deposit" are an important factor in the growth of the domestic and foreign commerce of a port.

New Orleans is constructing its port facilities on a vast and comprehensive scale, overcoming great handicaps in the process. Among those that have been overcome, and largely within the past fifteen years, are: (1) periodic epidemics of yellow fever, (2) fear of bubonic plague, (3) inadequate drainage, (4) no pure water supply, (5) no sewerage system, (6) no railroad belt, (7) inadequate river channel to the sea over the bar at the mouth of the river, (8) no harbor front warehouses and only crude freight handling methods, (9) public ownership of harbor front and little opportunity for private enterprise to make economic use of it, (10) a state constitution that made it possible to impose the regular property tax on money on deposit. Yellow fever was wiped out by destroying 250,000 cisterns. Bubonic plague was overcome by rat proofing the buildings and vessels. Excellent water supply and sewerage system have been provided. The work of creating an efficient port has been the biggest undertaking. It is nearly accomplished.

No more wondrous was the New Orleans in the days of John Law than is the New Orleans of today, with its grain elevator, docks, warehouses, and canal. No more romantic was the New Orleans of the

[62] The *Scientific Monthly*, January, 1921; See the Inaugural Address of President Atwood in *School and Society*, February, 19, 1921, pp. 211-18.

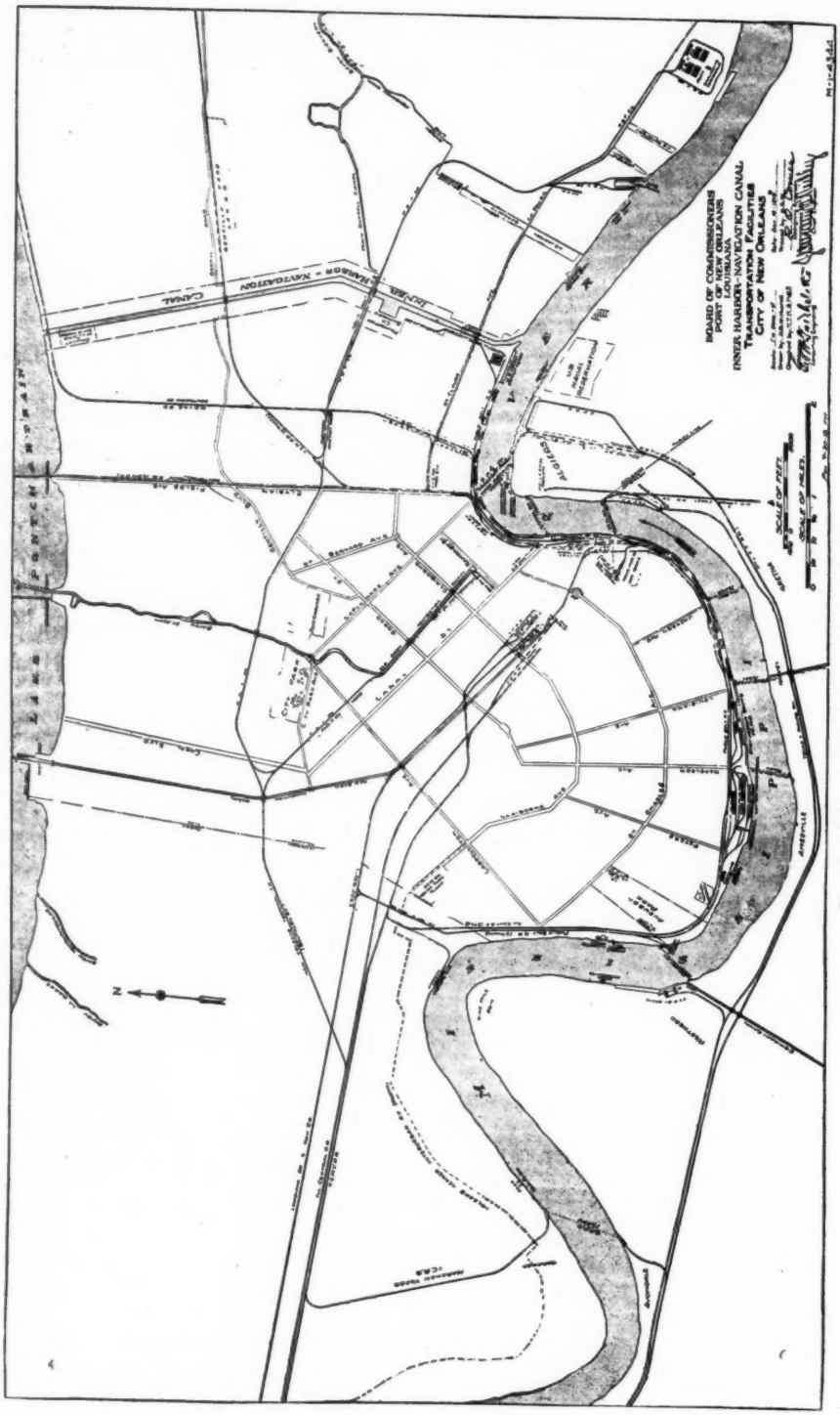

FIG 1. Map of the port of New Orleans.

French and Spanish days than the New Orleans of today in the whirlwind construction in which, on a tremendous scale, it is seeing its dreams materialize.

To come into the group of leading ports, it is necessary that the physical conditions of the harbor, the nature of its contact with its hinterland and with world highways, as well as the nature of its hinterland, should be satisfactory.

Before a harbor is classed as good, it must meet certain requirements. These are: (1) It must be a haven, that is, it must afford adequate protection from winds and waves. (2) Its sheltered waters must be roomy enough to provide ample accommodation for many ships and space enough for them to swing safely about but not so large that its advantages as a haven are lost. (3) The channel to the open sea should be fairly straight and should be of sufficient depth, but not too deep for good anchorage. (The requirement as to desirable depth has increased with the growth of vessels and today the desirable depth is about thirty or thirty-five feet.) (4) It should be free from very strong tidal or river currents, from shifting sands and from closure by ice. (5) It should have ease of access into the interior including adequate wharfage facilities.

The great sprawling delta front of the Mississippi River thrusts itself out, bit by bit, year by year, in what seemed to early observers, an effort to reach the West Indies. It has been like a great mobile arm that has reached out, during geologic time from the upper end of the great embayment of the Mississippi River in the vicinity of Cairo, Illinois, until now it lies extended into the Gulf about seventy-five miles and has a width across its great knuckles of some two hundred miles.

The only harbor along this two hundred mile stretch of delta front other than for coasting vessels, is the channel of the Mississippi River. But as tho to compensate for the paucity of good harbors along this stretch of coast, nature has been generous to the great harbor of New Orleans. It is one of the safest and best harbors in the world. Ships can be loaded in mid-stream but obviously for economic reasons do not. Only a small percentage of the freight is handled by lighters. Most of the landings are made at the wharves which extend from fifty to a hundred feet out from the bank.

The harbor of New Orleans, extending from the jetties at the mouth to Baton Rouge, has a length of 237 miles and of this the port of, New Orleans includes about twenty-five miles along both banks of the river. The city of New Orleans is about ninety-five miles up

the river from its debouchure. The distance is somewhat of a handicap, but one which is offset by the safety assured thereby. The harbor provides roomy anchorage, being one-half to three-quarters of a mile in width. It is free from shifting sand and of course from tide. The channel depth ranges from thirty-six to two hundred feet and within ten feet of the bank from forty to one hundred feet. The deep-water-channel, perfected by the Federal Government, from New Orleans to the sea, was completed at a cost of $20,000,000. Today fifty per cent of the traffic passes thru Southwest Pass, fourteen per cent thru South Pass, and the rest thru Pass Á l'Outre. The Government is now at work on a thirty-five foot channel thru Southwest Pass, narrowed to a width of 1,000 feet, about one-fifth of its former width, by timber breakwater. Altho the improvements will cost more than $12,000,000, it is estimated that within fifty years the arable land developed by the deposition of silt between the original jetties and the wooden bulkheads in two strips of five miles each and two thousand feet wide will have as great a value to the state. Moreover, when the improvement is completed more than ninety-nine per cent of the world's ships can come up river to New Orleans under any weather conditions.

On this fine harbor is the port of New Orleans. The Port of New Orleans, includes all of the parish of New Orleans and those parts of Jefferson and St. Bernard parishes adjacent to the Mississippi River.[1] It extends from Chalmette to Westwego and Southport above the city. The length of water front at the port is about 41.5 miles. There are eight miles of water front improved with wharves, elevators and warehouses on both sides of the river. The four miles of improvements opposite the city are at the suburbs, Westwego, Gretna, McLellanville, McDonoughsville, Amesville, Algiers, and Harvey's Canal, and are less complete and extensive.

By a clause in the treaty whereby the United States secured Louisiana, the water front was forever to remain public property. This provision has had a very remarkable and far reaching effect upon the development of the city and valley. As a result of it, the state of Louisiana owns the water front. Certain private interests are located on the water front, but these are subject to expropriation by the State.[2]

On the city side of the river, the wharves and landings extended year by year until in 1896 the State Legislature passed an Act creating

[1] Sec. 2568, U. S. Rev. Stat.

[2] Art. 290, State Constitution of Louisiana.

a Board of Commissioners for the Port of New Orleans. This was deemed necessary as the port had gradually extended beyond the limits and jurisdiction of the city of New Orleans and consequent difficulties of management, when authority was divided between three parishes, proved injurious to the traffic of the port.

It was not, however, until 1901 that the Board of Port Commissioners, thus created, undertook the active regulation of the commerce and traffic of the Port and Harbor of New Orleans. Since then more than $15,000,000 have been spent in improving more than four miles on the east bank, in the construction of wharves, warehouses, elevators and steel sheds. Today New Orleans is one of the two leading ports in the United States in the extent of public terminals under public control.

Terminals serve as reservoirs for freight. The seasonal factor in freight distribution requires such provision for the slowing up of freight enroute in economic distribution. Nearly thirty per cent of

Photo by Chas L. Franck, New Orleans, La.

FIG. 2. View down the Mississippi River from the public grain elevator of which is shown the side view and marine tower and dock gallery. Just beyond and to the left as one faces the river is the public cotton warehouse. In the foreground to the right of the grain elevator is the Otis mahogany plant.

the incoming freight passes over the New Orleans wharves direct, and, if freight held in transit is included, the percentage reaches nearly fifty per cent.

OPERATION AND MANAGEMENT OF THE PORT

Three distinct administrative bodies have jurisdiction over the port of New Orleans, each of its own field of operation, but all working harmoniously. The Board of Commissioners of the Port of New Orleans controls, imposes, and collects harbor fees, dockage, sheddage, and wharfage. This board is commonly called the "Dock Board." It is empowered to "acquire or build wharves, to make and maintain improvements thereon, including grain elevators and cotton warehouses, to maintain proper depths of water at the wharves, to provide light, water, police protection and such services for such wharves, landings, and sheds as they may deem advisable." The Dock Board fixes the charges made for the use of the public facilities in its control. It is appointed by the Governor and serves without compensation. The Board of Commissioners of the New Orleans Levee District builds levees to protect the city from floods, having the power to acquire land by purchase or condemnation therefore. The land thus acquired has been sufficient to provide the "Dock Board" with sites for wharves and wharf sheds and much land for a right of way for the Public Belt Railroad. These two bodies are state boards. The third body exercising control over the Port of New Orleans is the Public Belt Railroad Commission which is a municipal body.

Heretofore a lack of ship and boatside storage had resulted in giving the "thru" shipper advantages over the New Orleans shipper and a large percentage of the commerce of the port used New Orleans as a shipping point instead of as a port market of deposit. A firm basis not only for the reviving of inland water traffic, but also the development of foreign commerce depends upon warehouse and concentration facilities for the assembling of imports and their distribution to the interior as needed and likewise of exports and their distribution to foreign consumers as needed.

Terminal Facilities. The elements provided thus far in this development of New Orleans as a market of deposit consist of a public cotton warehouse and handling plant, a public grain elevator, a publicly owned belt railroad, a public commodity warehouse, an industrial canal, and public steel docks.

Wharves. The facilities provided by the Dock Board comprise sixty per cent of the total improved river front. These public facilities

consist of eighteen steel sheds having a length of nearly 18,000 feet, open wharves having a length of more than 4,200 feet, and 1,200 and 1,500 feet of wharf at the grain elevator and cotton warehouse respectfully. Of the 4,125,182 feet of wharves and paved roadways 2,269,166 are covered. Freight does not accumulate on the wharves, nor does the port become congested. The wharves are used chiefly as transfer platforms from car to ship and vice versa. They are not leased, but are allowed to steamship companies on an assignment rental.

Public Cotton Warehouses. The public cotton warehouse occupies a site of approximately eighty acres with two thousand feet of wharf frontage on the Mississippi River. Built at a cost of $3,000,000, it consists of multiple story reinforced concrete fire-proof units. Provision is made for the construction of additional units as needed. The capacity at present is 2,000,000 bales, but this can be doubled.

The cotton warehouse provides for the compressing, storing, and handling of thru and consigned cotton. There are many specially designed devices to cheapen costs. It is equipped with four high

FIG. 3. Public grain elevator as seen from the river front.

density compresses, reducing cotton to thirty-three pounds to the cubic foot. This gives twenty per cent reduction in freight rates. There are automatic weighing machines, electric trucks, internal concrete runways, traveling electric cranes, and a wharf house for assembling cargo. The warehouse is equipped with fire sprinklers and hydrants, providing such protection as to result in a rate of fifteen cents per $100 for fire insurance as against a cotton rate of $2.50 per $100 in many places in the South.

Public Grain Elevator. An important feature in the port development is the Public Grain Elevator. New Orleans has eight large grain elevators, with a capacity of 5,000,000 bushels. Seven of these serve the port, and six of them are used for export trade. The newest of these is the Public Elevator, completed within the past two years, at a cost of more than $2,500,000. It has a capacity of 2,700,000 bushels, to which additions can be made as the need arises.

It handles half of the grain that passes thru the port. Out of a total of 46,000,000 bushels of grain export business in the year 1918, the Public Elevator handled more than 20,000,000 bushels.

The construction of the grain elevator and its operation is generally conceded by grain elevator men to be the "last word" among such enterprises. It is not operated for profit, but wholly to serve the grain business. It is of very great consequence in the movement to restore the Mississippi River as a grain carrier.

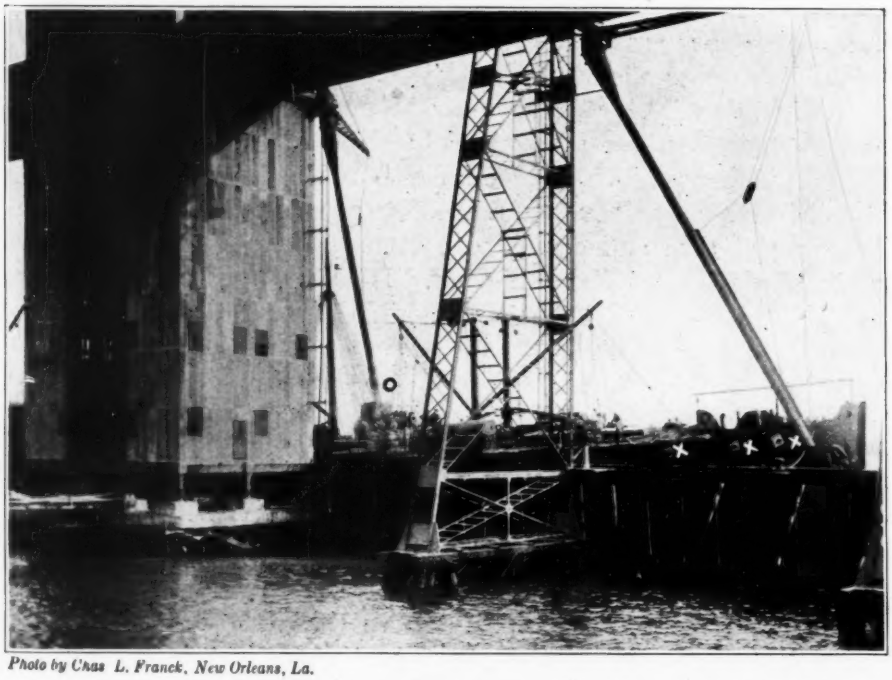

Photo by Chas L. Franck, New Orleans, La.

FIG. 4. Public grain elevator, marine tower and portion of dock gallery. The pneumatic conveyor loom rigging "o" is seen swinging out over the steamship. Note the rat-proofing device marked "x."

The building is of reinforced concrete, protected with fire protection devices so as to permit an insurance rate of fifteen cent per hundred dollars. A pneumatic conveyor system makes it possible to receive grain from river barges at 6,000 bushels an hour. This system is used in place of a marine leg, owing to varying river stages, covering a rise and fall of about twenty-two feet. The unloading capacity from river barges and ships is not only from 60,000 to 100,000 bushels per day, but it can be in process in from one to four vessels per day. Loading to ships or river barges can be made at the rate of 100,000 bushels per hour, simultaneously to one or four vessels. Such loading and unloading means a reduction of the time in port of ships.

All grain is inspected and weighed into and out of the elevator by the New Orleans Board of Trade. The plant is equipped with the Zelaney thermometer system to protect grain in storage, with a drying equipment consisting of two machines of 1,000 bushel capacity per hour, and with a cleaning and clipping equipment, and with automatic

Photo by Chas. L. Franck, New Orleans, La.

FIG. 5. Public grain elevator, marine tower and dock gallery, showing pneumatic conveyor loom rigging.

sacking scales. Twenty cars of sacked grain can be handled in ten hours.

Since construction of the Public Grain Elevator, the Southern Pacific, and the Louisville and Nashville have become grain carrying roads, whereas previously only the Illinois Central and the Texas and Pacific carried grain.

Public Commodity Warehouse and Wharfhouse. Another very important feature in the port development is the great commodity warehouse and wharfhouse, which has just been completed. It adjoins the American Sugar Refinery. It was built by the government as the New Orleans Army Supply Base at a cost of between $15,000,000 and $20,000,000. It has a storage area of forty-eight acres and consists of three units. These units have a storage capacity of 178,500 tons and a floor space of thirty-five acres. They are of standard design and adapted to miscellaneous manufactured goods. One unit was retained by the government as a permanent army base to handle Panama Canal and South and Central American supplies. The other two were turned over to the Dock Board for public use. They are constructed for war or peace requirements of army, public and private warehousing. They are adapted to use not only for storage of army supplies and for loft manufactures, but also to import and export transfer and storage.

The warehouse is especially designed for the storage of the principal standard package imports and exports, such as coffee, sisal, cotton, and tobacco. The capacity for coffee is 3,400,000 bags, for sisal is 500,000 bales, and for tobacco is 150,000 hogsheads.

The principal means of transfer are trucks and trailors. Cars may be loaded at any point on the platform of the warehouses and switched to the platforms of the three wharfhouses.

The wharf will accommodate five to eight seagoing vessels at once and the tracks adjacent to the wharfhouses will accommodate 138 box cars, the yards 520 cars, the wharfhouses 130 cars, and the wharf 88 cars, making a total of 738 cars.

Consigned commodities may be transferred from ships to these warehouses and from warehouse to customers in New Orleans or other cities without handling other than the port of entry storage. Thus tobacco may be shipped and held in storage for curing at the warehouse while sales are being made in this country or elsewhere. This private storage may be extended to supplement the storage of all wholesale business houses.

By providing convenient and low-cost storage for import and export commodities between the period of production and consumption, a re-sale market for such commodities is made possible. This is highly important in the maintenance of an available supply of cargoes to ships. It will thus affect very materially the growth of inland water transportation and will stimulate the foreign trade of the port.

The Industrial Canal

A striking feature in the port development is the construction of the Industrial Canal, connecting Lake Ponchartrain and the Mississippi River.

River sites are not available for private ownership. This has been a factor in retarding development. Strategic advantage accrues to industries from river-rail-ocean location. To provide sites for industries which should have the advantage of river-ocean transportation, the Boards of Commissioners of the Port is constructing the Industrial Canal. It is called "The Harbor of the Greater Port of New Orleans." It will be completed in July, 1921.

It is a locked, fixed-level canal, extending six miles thru New Orleans from the Mississippi River in Lake Ponchartrain. It is 300 feet wide at the top. At first the channel depth will be fourteen feet, but later it will be thirty-five feet. At the river end is a lock seventy-five by six hundred feet, with a minimum depth of thirty feet of water over the sill. About a mile from the river end is a turning basin 850 by 1,000 feet. The lock and basin are of a size to accommodate the largest ships. The fact that the water in the canal back of the lock will be at a fixed level, not changing on account of high water in the river or tides, makes possible a more economical wharf and pier construction. The river is at an elevation exceeding six feet above mean Gulf level for an average period of six months of the year.[3]

There will be 8,100 acre feet of water in the canal. Back of the locks the canal will be 410 feet wide, permitting two ocean vessels drawing thirty feet to pass. This section is called the "fair-way" and here will be the sites of deposit warehouses and facilities for the new inland waterways trade and barge lines. Beyond this are shipbuilding sites. Individual slips will provide shipside loading, there being room for about fifty of these slips. The lake end also has shipbuilding plant sites and sites for commercial enterprises on both sides of the canal. Sites for commercial enterprises may be leased from the Board of Commissioners of the Port, or purchased in fee simple. The available frontage will equal that of the Hudson River on Manhattan Island. The complete plans provide lateral canals branching thru the city and giving direct access to boats for most of the commercial enterprises and industries of the city.

The channel thru Lake Ponchartrain is to be deepened. Connecting with the Industrial Canal, it gives a highway for ocean-going ves-

[3] Proc. La. Engineering Soc., Apr., 1918, Vol. IV, p. 76.

sels, about half the distance up the river to the city. The canal will be a link in the Intercoastal system which ultimately will connect Boston with the Rio Grande. Direct railroad connection to the canal will be furnished by the Public Belt Railroad which is carried over the canal by a bascule bridge.

The canal affords a refuge for shipping in New Orleans when warnings are given of approaching storms. The lateral canals would provide safe anchorage for coal boats, ferry-boats and other shipping. In the great storm of 1915, the coal loss was more than a million dollars. Loss to the other craft that might have secured safe anchorage in such a canal amounted to more than a million dollars.

Ideal conditions are found in the canal for the location of a "Free Port." The river front of New Orleans is not suitable for this, as such an area should be capable of being inclosed so that all coming and going may be under the supervision of government officials.

Authorization by Congress is needed before a free zone can be established on the Industrial Canal.

Direct railroad connection to the canal will be furnished by the Public Belt Railroad which is carried over the canal by a bascule bridge. The canal will also provide such port facilities to the railroads as to make the port attractive to them. The fact that they could secure harbor frontage in Galveston, Mobile, Savannah, Baltimore and New York in fee simple ownership has been a potent factor in diverting traffic and hence commerce from New Orleans. The canal allows one-hundred per cent elasticity in the movement of freight and thus removes a great economic handicap from the port of New Orleans. It ranks with the six greatest canals in the world. Only Panama, Suez, and Kiel will equal it in depth of water when it is ultimately completed.

Bunkering Facilities

Coal. For the purpose of handling coal, the port is equipped with coal tipples with single and double track, floating coal elevators, a fleet of barges for transporting, and additional barges for storing coal.

Between 600,000 and 700,000 tons are handled yearly in the port of New Orleans. Most of this coal comes by rail. About one-sixth comes by way of the Warrior and Alabama Rivers, across Mississippi Sound and thru Lake Borgne Canal.

The Dock Board is planning the erection of a coal handling plant with a minimum capacity of 25,000 tons. It will be equipped to receive coal from cars and barges. Its wharf will be long enough to accommodate three ships at one time. It will have a loading capacity

of three hundred tons hourly, either from coal storage or directly from cars.

Oil. There are nine oil companies located in the harbor of New Orleans, including the Standard Oil Company at Baton Rouge, 130 miles up river from New Orleans. The wharves of the others extend from as far as Avondale up the river to Mereauxville down the river.

PRIVATELY OWNED FACILITIES

Among the privately owned properties which comprise forty per cent of the wharf facilities are four railroad docks. These have a total length of more than 17,000 feet and have connecting railroad terminals of nearly two hundred miles. The docks have 2,500,000 square feet of floor space, 1,800,000 being covered.

The steamship companies own no wharves. The railroads make no dockage charges. Private wharves are used only for the industries they serve and may not be open to public use, or compete with the public wharves.

Important industrial enterprises other than railroad terminals also have docks along the river. One of these is the American Sugar Refinery Company at Chalmette, equal in size to the plant at Philadelphia and second only to that at New York. It is equipped with the Telpher system for receiving, storing, and delivering raw sugar, consisting of twenty-five machines, each having a capacity of one ton. Another enterprise is the Otis Mahogany Company, the largest importers of mahogany in the world. Its docks adjoin the Public Grain Elevator.

RAILROAD SERVICE

There are eleven railroads serving the port. Of these ten are trunk lines. Four of these trunk lines have terminal facilities on the river front. Switching service to all these railroads is supplied by the Public Belt Railroad, which is a terminal switching railroad, owned and operated by the City of New Orleans. It transfers cars from railroad to wharves and vice versa, from railroad to railroad, from railroad to industries and from industries to all transportation outlets. Its purpose is to expedite loading and unloading of goods.

The operations of the road at present include commercial and industrial activities on the river front and the adjacent territory. There is also a spur in the rear of the city. The projected double main line extends along the river front from the Orleans-Jefferson Parish boundary to the Industrial Canal and along the Upper Protection

Levee in the rear of the city. It connects with the United States Military Warehouse and the New Orleans Terminal Company tracks. Numerous switches connect the public wharves and commercial sections with the main line. The Belt Road owns sixty miles of trackage and fifteen locomotives. It was commenced in 1903. It serves eleven public delivery tracks and connects with seventy commercial plants and warehouses. Its lines, however, will include a belting of the entire city and the outlying districts and will enable any warehouse or factory in the city or railroad entering the city to reach any wharf or landing on the river front.

Charges of the Public Belt Road are fixed by the Interstate Commerce Commission. New Orleans has a total of about two hundred miles of terminal trackage. It is estimated that the total export trackage of New Orleans could accommodate 13,000 cars, exclusive of grain.

Thru the wharves, warehouses, and belt lines, river, rail and ocean freight are coördinated. Thru opportunity furnished by the public warehouses and elevators for storage of goods in transit between production and consumption, New Orleans may develop into a market of deposit and re-sale.

The new barge line on the Mississippi may mean a renaissance of river traffic. That only the future can prove. If the Mississippi Valley awakens to the possibilities in the great river, New Orleans will come into its own as the port at the mouth of the greatest river in the world.

HOME GEOGRAPHY AND HISTORY BY THE PROBLEM METHOD[1]

ALICE M. KRACKOWIZER
Supervisor of Grades, Lewistown, Montana

GEOGRAPHY

The outline and problems suggested are one of several possible ways of approach.

Main Problem

What can be our individual contribution to the community and country in which we live? What can we do to help?

I. What can we find out about Lewistown community and country life?

[1] This fourth grade outline illustrating the combination of problem solving, home geography and history, was prepared by the author for use in the schools of Lewistown, Montana. It should prove very suggestive to other teachers confronted with this difficult teaching problem. Any teacher who is willing to gather the data will experience little difficulty in adapting the plan to her community.—Editor.

Interpretive Problems

1. Occupation of the people and reasons for the same
   Geographic background
2. Study of and excursions to the principal industries
3. Occupations of the town and those of the country
4. Interdependence of one upon the other
5. Transportation facilities; for what purpose used
6. Irrigation; purposes; how accomplished; water supply
7. Other factors of cooperative living in home and on ranches
   Size of ranches; equipment; interpretation
   1) Lighting and heating plants, etc.
   2) City enterprises; street paving, etc. Is Lewistown what is called a "public spirited" town?
8. What gives Lewistown its reputation?
   1) Main enterprises
   2) Transportation and means and methods of shipping
   3) Geographic distribution of Lewistown products
   4) Financial returns
   5) What returns are made to Lewistown? Why?
9. What can we do to make Lewistown and our special home more attractive?
   1) Keeping yards clear of rubbish
   2) Burning weeds
   3) Looking after lawns
   4) Cultivating good habits in connection with the home
   5) Keeping fences in repair, etc., etc.
   6) Cultivating a spirit of pride and competition
   7) Reporting results in school, and getting credit for material results

II. The state of Montana is a type of this section of the country Is it all like Lewistown community? (Study of Montana as a state.)
   1. Other occupations and industries of the state with geographic background for the same
      1) Study of text, maps and pictures
      2) Supplementary material
      3) Museum specimens and collections
   2. Montana as a place of beauty and inspiration
      1) The scenery and some of the geological history
      2) Fossils; hot springs, etc.

3) The skies and cloud effects
4) The climate

3. Montana as producer, distributor and consumer for the rest of the United States
   1) Character of shipments
   2) Destination of shipments
   3) Means and methods of transportation
   4) Character of returns received and regions contributing them

III. The neighboring country of Canada. Why is it of interest to the United States and of special interest to us here at Lewistown? A comparison of western Canada with the state of Montana
   1) As to geographic conditions of climate, topography, natural resources
   2) As to state of development and possibility of advancement
   3) As to present character of population
   4) As to historic development
   5) As to special points of interest; scenery, treasures, of the past

IV. Other regions of the United States compared with Montana and their types of states. What determines similarity and differences?
   1 Study of a few of the main industries of interest to children of this age
   2 A series of regional pictures, such as, the New England states, the cotton growing states, life on the ocean beaches and shore, life on cattle ranches
   3 The beginnings of an understanding of adaptation to environment, from effect to the underlying cause, etc.
   4 A comparison of Montana features and products with similar ones as found in other sections of the United States
   5 Continuation of questions on transportation, etc. raised within the state of Montana

   The study of this topic will be helped and supplemented by the historic study of "The Indian as Product of his Environment."

V. Summary
   1. In what ways do you better understand your home surroundings because of your trips elsewhere?

2. What have you found elsewhere, which will help you to improve your home surroundings?
3. What have you to give here, which would be valuable in other sections of the country? Where?

HISTORY

The outline and problems suggested are one of several ways of approach.

Main Problem

How can we best learn to take part in the community life of the region in which we are living?

Interpretive Problems

I. How did Lewistown come to be? Pioneer history of Lewistown
   1. Who are the people still living who can give us information?
   2. What are the sources—books, newspapers, etc., available for gathering materials?
   3. What was the country like in those days
   4. Who were some of the people prominent in the early community? What did they do?
   5. How many of the experiences we hear and read about can we reproduce in our story by "living" them
   6. Can we write up the material we have gathered, so some one else can use it?
   7. What collection of material can we make of this early history?
   8. What people already on the ground did the early settlers have to deal with?
   9. The Lewistown of today. Reasons for growth along various lines. What improvements can be made for the future?

II. Pioneer History of Montana. (If material is more readily available, this topic may precede topic 1, while material for the latter is being gathered.)
   1. Fur trade
   2. Mining
   3. Sheep men
   4. Cattle men
   5. Truck gardening
   6. Agriculture
   7. Oil

   This topic, as are also topics 1 and 3, is very closely associated with the geography work. According to the material available, it can be carried out much in the same way as the home topic (The story of Sacajawea and Lewis and Clarke).

III. The Indian as product of his environment
1. The Cliff Dwellers. (Wiley and Edick: Children of the Cliff; Farrand: Basis of American History; Fynn: The Indian as Product of His Environment; Shaler: Our Continent. Bayliss: Lolami, The Cliff Dweller)
1) How they used their environment
2) What were the important results?
3) What amount of interesting skill and knowledge did they possess?
4) What is their contribution to the country at large?
2. The Indians of the southwest
1) See topic one
2) How largely were the development of pottery and basketry direct responses to their environment?
3. The Indians of the northwest
1) What conditions led them into the fishing industry?
2) What geographic conditions made totem poles possible? What was their significance?
4. The California Indians
1) Natural advantages
2) What was the influence of the mission life on the Indians? (Snedden: "Docas, the Indian Boy")
5. The Indians of the Plains
1) What accounts for their roaming habits?
2) What were their main hunting grounds?
3) Did they hunt anything we no longer find?
6. The Indians of the eastern forest lands
1) Which other Indians did they most resemble? Why?
2) In what ways did they distinctly differ? (Longfellow: "Hiawatha")
7. Comparisons. How did the geographic background express itself in:
1) Their houses? (Fiske: "Discovery of America," Vol. 1)
2) Their clothing?
3) Their occupations and decoration?
4) Their food?
5) Their disposition of leisure time: games, customs, etc.
6) Their intercourse with other tribes?

IV. Early history stories
1. True stories of contact with Indians in early American history

2. Stories of early explorers and their contact with the country and the natives
3. Stories of early pioneer travels: the prairie schooner, etc.
4. Stories of foreign countries from which the people of Lewistown have come. (Perkins: "The 'Twin' Series"; Wade: The Little Cousin Series")

V. Summary
1. In what ways have these various people used their surroundings?
2. In what particular field has anyone of these excelled?
3. In what ways is our life more complex than theirs?
4. What effect has this upon the ease with which we can live together? (The evolution of social virtues becomes more and more necessary.)
5. What are some of the things we must be willing to learn and to do, which make for better living with people?
6. How can we apply this to our homes, our school, our ranches, our town?

PROJECTS GROWING OUT OF GEOGRAPHY AND HISTORY WORK

I. Dramatization and reproduction of Indian and pioneer life
II. The sand table or pile. Also, the poster
1. Studies of early pioneer life
2. Indian community life
3. Modern industrial life
4. Modern ranch life
5. Life of foreign peoples, before coming to the State
6. Geographic features as worked out in connection with story
1) Mountains and plains. Montana mountain climbing or mining
2) River basins, delta, etc., etc. The navigation of Mississippi and Missouri

III. Costuming
1. Indian costumes for dramatization
2. Costumes of foreign children
3. Dressing dolls

IV. Industrial occupation
1. The canning of vegetables
2. The making of butter
3. Weaving, dyeing, designing, simple processes; study of pottery

4. The making of pottery, with a study of Indian and Mexican pottery
5. Basketry, with a study of materials used by Indians all over United States
6. Excursions to mill, brick yard; bead work, etc.

V. Miscellaneous
1. Scrap books for geography and history
2. Collections of specimens for school museum
3. Transportation booklets
4. The installment of the school store for arithmetic; contact with actual conditions and prices in the town
5. Regional product or special scenery maps
6. Blackboard drawing for illustrative purposes
7. Picture puzzles of maps mounted and cut up

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ANNUAL MEETING
OF THE
NATIONAL COUNCIL OF GEOGRAPHY TEACHERS

The annual meeting of the National Council of Geography Teachers will be held at the home of the National Geographic Society, 16th and M Streets, N. W., Washington, D. C., December 28, 1921. The New Ebbitt will be the official hotel headquarters. The rates range from $2.50 for a single room without bath to $4.00 with a bath and the price of double rooms with similar accommodations ranges from $2.00 to $3.00 for each person. You are urged to make your reservations early.

It has been found to be impractical to secure special railroad rates for the meeting.

The meeting will consist of a series of reports arising from the work inaugurated at the Chicago conference.

PROGRAM

Morning Session (11:00 o'clock)

A visit will be made to the printing establishment of the National Geographic Society. Automobiles will leave the Society's building at 11:30 A. M. and return at 1:15 P. M. Luncheon will then be served in the Society's building.

Afternoon Session. (2:30 o'clock) Wallace W. Atwood, President of the National Council, presiding

Report of Secretary of the National Council on the year's work

Presidential Address. President Wallace W. Atwood.

Report of Committee on a Standard Course of Study in Geography for Elementary Schools

Professor Burton A. Barnes, Detroit, Mich., Chairman

Special speakers:

Professor Richard E. Dodge, Storrs, Conn.
Miss Erna Grassmuck, Harrisburg, Penn.
Professor Albert Perry Brigham, Hamilton, N. Y.
Professor Leonard O. Packard, Boston, Mass.

Discussion will then be open to all present.

Report of Committee on Geography in the Normal Schools

Professor Douglas C. Ridgley, Normal, Ill., Chairman

Report of Committee on Geography in the High Schools

Professor N. A. Bengtson, Lincoln, Neb., Chairman

Adjourn for Dinner

It is hoped that arrangements can be made for those attending the meetings of the Council to dine together at some convenient place. Announcement of plans will be made at the afternoon meeting.

Evening Session. (8:00 o'clock) Wallace W. Atwood, President of the National Council, presiding

Address. The Educational Work of the National Geographic Society. Maynard Owen Williams

A round table discussion on the co-ordination or integration of the work in geography and the other social sciences in the elementary school curriculum, will be held.

Report of the nominating committee and election of officers for the ensuing year.

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Dr. Barnes is professor of history in Clark University. His wide range of experience has made him a close student of subjects intimately allied to history, particularly such subjects as sociology and geography. He spent a year as Fellow in Historical Sociology at Columbia University, and a year as William Bayard Cutting Traveling Fellow in History of Thought and Culture. He was historian to the New Jersey Prison Inquiry Commission in 1917, and to the Pennsylvania Penal Commission the following year. Aside from his contributions to the Encyclopedia Americana, he has written many magazine articles, monographs, and books. Among his more recent magazine articles are the following: "The Historian and the History of Science," *Scientific Monthly*, Aug., 1920; "The Contributions of Sociology to Modern Political *Theory*," *American Political Science Review*, Nov., 1921; "The Past and the Future of History," *Historical Outlook*, Feb., 1921.

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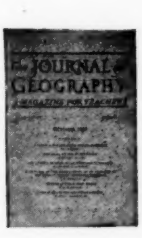

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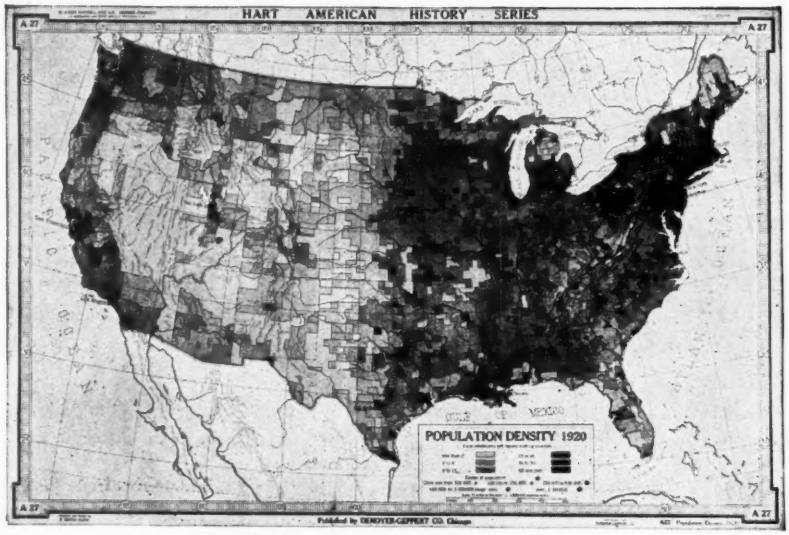

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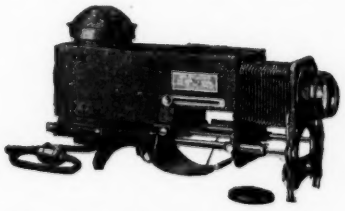

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